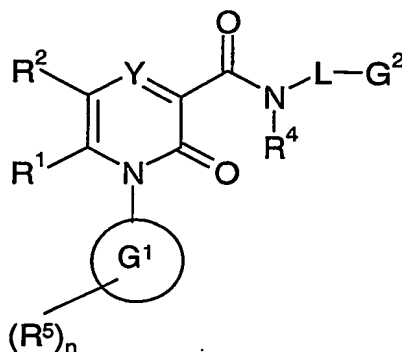


Claims

1. A compound of formula (I)



(I)

wherein:

Y represents CR<sup>3</sup> or N;

R<sup>1</sup> represents H or C1 to 6 alkyl;

R<sup>2</sup> represents:

i) CN, NO<sub>2</sub>, OH, OSO<sub>2</sub>R<sup>47</sup>, O-C2 to 6 alkanoyl, CO<sub>2</sub>R<sup>47</sup>, CHO or C2 to 6 alkanoyl; or

ii) C1 to 6 alkoxy optionally substituted by OH, C1 to 6 alkoxy, CN, NR<sup>54</sup>R<sup>55</sup>, CONR<sup>54</sup>R<sup>55</sup>, OCOR<sup>47</sup> or one or more F atoms; or

iii) C3 to 6 saturated or partially unsaturated cycloalkyl optionally further substituted by C1 to 6 alkyl; or

iv) C4 to 7 saturated or partially unsaturated heterocyclic ring containing 1 to 3 heteroatoms independently selected from O, S(O)<sub>m</sub> and NR<sup>62</sup> optionally further substituted by C1 to 6 alkyl; or

v)  $\text{CONR}^{48,49}$ ,  $\text{CONR}^{50}\text{NR}^{48,49}$ ,  $\text{C}(=\text{NOR}^{52})\text{R}^{53}$ ,  $\text{C}(=\text{NH})\text{NHOR}^{52}$  or  $\text{NR}^{48,49}$ ;

or

vi) C2 to 6 alkenyl or C2 to 6 alkynyl; said alkenyl or alkynyl group being optionally further substituted by C1 to 6 alkoxy or phenyl or a five- or six-membered heteroaromatic ring containing 1 to 3 heteroatoms independently selected from O, S and N; said phenyl or heteroaromatic ring being optionally further substituted by halogen, CN, C1 to 6 alkyl or C1 to 6 alkoxy; or

vii) C1 to 6 alkyl substituted by one or more F atoms; or

viii) C1 to 6 alkyl substituted by one or more groups selected from halogen, OH, oxo, azido,  $\text{NR}^{48,49}$ , C1 to 6 alkoxy and C1 to 6 alkoxy substituted by one or more F atoms; or

ix) C1 to 6 alkyl substituted by phenyl or a five- or six-membered heteroaromatic ring containing 1 to 3 heteroatoms independently selected from O, S and N; said phenyl or heteroaromatic ring being optionally further substituted by halogen, CN, C1 to 6 alkyl or C1 to 6 alkoxy;

$\text{R}^{48}$  and  $\text{R}^{49}$  independently represent H, OH, C1 to 6 alkoxy, C3 to 6 cycloalkyl, CHO, C2 to 6 alkanoyl,  $\text{CO}_2\text{R}^{50}$ ,  $\text{C}(\text{X})\text{NR}^{63,64}$  or C1 to 6 alkyl; said alkyl being optionally further substituted by OH, C1 to 4 alkoxy, C3 to 6 cycloalkyl, CN or phenyl or a five- or six-membered heteroaromatic ring containing 1 to 3 heteroatoms independently selected from O, S and N; said alkanoyl being optionally further substituted by CN;

X represent O or S;

or the group  $\text{NR}^{48,49}$  together represents a saturated or partially unsaturated 5 to 7 membered azacyclic ring optionally incorporating one further heteroatom selected from O, S and N; said azacyclic ring being optionally further substituted by one or more substituents selected from  $\text{OR}^{57}$  and C1 to 4 alkyl; said alkyl being optionally further substituted by  $\text{OR}^{57}$ ;

$R^3$  represents H or F;

$G^1$  represents phenyl or a five- or six-membered heteroaromatic ring containing 1 to 3  
5 heteroatoms independently selected from O, S and N;

$R^5$  represents H, halogen, C1 to 6 alkyl, CN, C1 to 6 alkoxy,  $NO_2$ ,  $NR^{14}R^{15}$ , C1 to 3 alkyl  
substituted by one or more F atoms or C1 to 3 alkoxy substituted by one or more F atoms;

10  $R^{14}$  and  $R^{15}$  independently represent H or C1 to 3 alkyl; said alkyl being optionally further  
substituted by one or more F atoms;

$n$  represents an integer 1, 2 or 3 and when  $n$  represents 2 or 3, each  $R^5$  group is selected  
independently;

15  $R^4$  represents H or C1 to 6 alkyl; said alkyl being optionally further substituted by OH or  
C1 to 6 alkoxy;

or  $R^4$  and  $L$  are joined together such that the group  $-NR^4L$  represents a 5 to 7 membered  
20 azacyclic ring optionally incorporating one further heteroatom selected from O, S and  
 $NR^{16}$ ; said ring being optionally further substituted by C1 to 6 alkyl or  $NR^{60}R^{61}$ ; said  
alkyl being optionally further substituted by OH;

$L$  represents a bond, O,  $NR^{29}$  or C1 to 6 alkyl; said alkyl optionally incorporating a  
25 heteroatom selected from O, S and  $NR^{16}$ ; and said alkyl being optionally further  
substituted by OH or OMe;

$G^2$  represents a monocyclic ring system selected from:

- i) phenyl or phenoxy,
- ii) a 5 or 6 membered heteroaromatic ring containing one to three heteroatoms independently selected from O, S and N,
- 5 iii) a C3 to 6 saturated or partially unsaturated cycloalkyl, or
- iv) a C4 to 7 saturated or partially unsaturated heterocyclic ring containing one or two heteroatoms independently selected from O, S(O)<sub>p</sub> and NR<sup>17</sup> and optionally further incorporating a carbonyl group; or

10 **G<sup>2</sup>** represents a bicyclic ring system in which each of the two rings is independently selected from:

- i) phenyl,
- ii) a 5 or 6 membered heteroaromatic ring containing one to three heteroatoms independently selected from O, S and N,
- 15 iii) a C3 to 6 saturated or partially unsaturated cycloalkyl, or
- iv) a C4 to 7 saturated or partially unsaturated heterocyclic ring containing one or two heteroatoms independently selected from O, S(O)<sub>p</sub> and NR<sup>17</sup> and optionally further incorporating a carbonyl group;

20

and the two rings are either fused together, or are bonded directly together or are separated by a linker group selected from O, S(O)<sub>q</sub> or CH<sub>2</sub>,

25

said monocyclic or bicyclic ring system being optionally further substituted by one to three substituents independently selected from CN, OH, C1 to 6 alkyl, C1 to 6 alkoxy, halogen, NR<sup>18</sup>R<sup>19</sup>, NO<sub>2</sub>, OSO<sub>2</sub>R<sup>38</sup>, CO<sub>2</sub>R<sup>20</sup>, C(=NH)NH<sub>2</sub>, C(O)NR<sup>21</sup>R<sup>22</sup>, C(S)NR<sup>23</sup>R<sup>24</sup>, SC(=NH)NH<sub>2</sub>, NR<sup>31</sup>C(=NH)NH<sub>2</sub>, S(O)<sub>s</sub>R<sup>25</sup>, SO<sub>2</sub>NR<sup>26</sup>R<sup>27</sup>, C1 to 3 alkoxy substituted by one or more F atoms and C1 to 3 alkyl substituted by SO<sub>2</sub>R<sup>39</sup> or by one or more F atoms;

or

30

when L does not represent an bond,  $G^2$  may also represent H;

at each occurrence, **m**, **p**, **q**, **s** and **t** independently represent an integer 0, 1 or 2;

5  $R^{18}$  and  $R^{19}$  independently represent H, C1 to 6 alkyl, formyl, C2 to 6 alkanoyl,  $S(O)_t R^{32}$  or  $SO_2 N R^{33} R^{34}$ ; said alkyl group being optionally further substituted by halogen, CN, C1 to 4 alkoxy or  $CON R^{41} R^{42}$ ;

$R^{25}$  represents H, C1 to 6 alkyl or C3 to 6 cycloalkyl; said alkyl group being optionally  
10 further substituted by one or more substituents selected independently from OH, CN,  $CON R^{35} R^{36}$ ,  $CO_2 R^{37}$ ,  $OCOR^{40}$ , C3 to 6 cycloalkyl, a C4 to 7 saturated heterocyclic ring containing one or two heteroatoms independently selected from O,  $S(O)_p$  and  $N R^{43}$  and phenyl or a 5 or 6 membered heteroaromatic ring containing one to three heteroatoms independently selected from O, S and N; said aromatic ring being optionally further  
15 substituted by one or more substituents selected independently from halogen, CN, C1 to 4 alkyl, C1 to 4 alkoxy, OH,  $CON R^{44} R^{45}$ ,  $CO_2 R^{46}$ ,  $S(O)_s R^{65}$  and  $NHCOCH_3$ ;

$R^{32}$  represents H, C1 to 6 alkyl or C3 to 6 cycloalkyl;

20  $R^{16}$ ,  $R^{17}$ ,  $R^{20}$ ,  $R^{21}$ ,  $R^{22}$ ,  $R^{23}$ ,  $R^{24}$ ,  $R^{26}$ ,  $R^{27}$ ,  $R^{29}$ ,  $R^{31}$ ,  $R^{33}$ ,  $R^{34}$ ,  $R^{35}$ ,  $R^{36}$ ,  $R^{37}$ ,  $R^{38}$ ,  $R^{39}$ ,  $R^{40}$ ,  $R^{41}$ ,  $R^{42}$ ,  $R^{43}$ ,  $R^{44}$ ,  $R^{45}$ ,  $R^{46}$ ,  $R^{47}$ ,  $R^{50}$ ,  $R^{52}$ ,  $R^{53}$ ,  $R^{54}$ ,  $R^{55}$ ,  $R^{56}$ ,  $R^{57}$ ,  $R^{60}$ ,  $R^{61}$ ,  $R^{62}$ ,  $R^{63}$ ,  $R^{64}$  and  $R^{65}$  independently represent H or C1 to 6 alkyl;

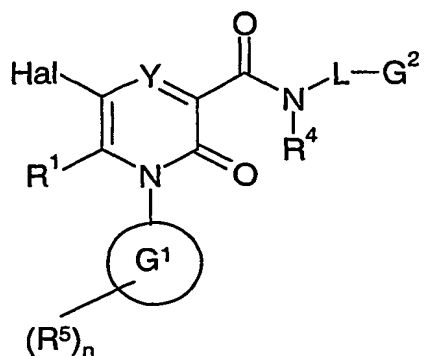
and pharmaceutically acceptable salts thereof.

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2. A compound of formula (I), according to Claim 1, wherein Y represents  $CR^3$ .

3. A compound of formula (I), according to Claim 1 or Claim 2, wherein G<sup>1</sup> represents phenyl.
4. A compound of formula (I), according to any one of Claims 1 to 3, wherein R<sup>5</sup>  
5 represents Cl, CH<sub>3</sub>, CN or CF<sub>3</sub>.
5. A compound of formula (I), according to any one of Claims 1 to 4, or a pharmaceutically acceptable salt thereof, for use as a medicament.
- 10 6. A pharmaceutical formulation comprising a compound of formula (I), as defined in any one of Claims 1 to 4, or a pharmaceutically acceptable salt thereof, optionally in admixture with a pharmaceutically acceptable diluent or carrier.
- 15 7. A method of treating, or reducing the risk of, a human disease or condition in which inhibition of neutrophil elastase activity is beneficial which comprises administering to a person suffering from or susceptible to such a disease or condition, a therapeutically effective amount of a compound of formula (I), as defined in any one of Claims 1 to 4, or a pharmaceutically acceptable salt thereof.
- 20 8. The use of a compound of formula (I) as defined in any one of Claims 1 to 4, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for the treatment or prophylaxis of human diseases or conditions in which inhibition of neutrophil elastase activity is beneficial.
- 25 9. The use of a compound of formula (I) as defined in any one of Claims 1 to 4, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for the treatment or prophylaxis of inflammatory diseases or conditions.
- 30 10. A process for the preparation of a compound of formula (I), as defined in any one of Claims 1 to 4, and optical isomers, racemates and tautomers thereof and pharmaceutically acceptable salts thereof, which comprises:

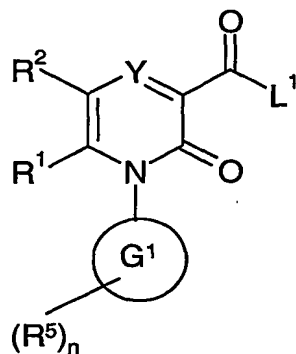
a) reacting a compound of formula (II)



(II)

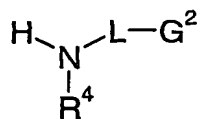
with a nucleophilic equivalent of  $R^2$ , such as  $Cu(I)CN$ , an alkyl vinyl ether, an organo-tin compound, an organo boronic acid, a terminal alkyne or an alcohol and carbon monoxide;  
 wherein  $R^1, R^2, R^4, R^5, Y, G^1, G^2, L$  and  $n$  are as defined in formula (I) and Hal represents a halogen atom, preferably bromo or iodo; or

b) reacting a compound of formula (XV)



(XV)

wherein  $R^1, R^2, R^5, n, G^1$  and  $Y$  are as defined in formula (I) and  $L^1$  represents a leaving group,  
 with a compound of formula (IX) or a salt thereof



(IX)

wherein  $\text{R}^4$ ,  $\text{G}^2$  and L are as defined in formula (I);

- 5 and where desired or necessary converting the resultant compound of formula (I), or another salt thereof, into a pharmaceutically acceptable salt thereof; or converting one compound of formula (I) into another compound of formula (I); and where desired converting the resultant compound of formula (I) into an optical isomer thereof.